SE Board
Class IX Chemistry
Sample Paper - 10

Time: 2 hrs. **Total Marks: 80**

General Instructions:

1. Answers to this paper must be written on the paper provided separately.
*2. You will **not** be allowed to write during the first **15** minutes.*
This time is to be spent in reading the question paper.
3. The time given at the head of the paper is the time allotted for writing the answers.
*4. Attempt **all** questions from **Section I** and **any four** questions from **Section II**.*
5. The intended marks of questions or parts of questions are given in brackets [ ].

SECTION I (40 Marks)

*Attempt **all** questions from this section.*

Question 1 [5]

(a) Fill in the blanks:

i. Pollutants such as NO_2, SO_2 and SO_3 dissolved in the moisture of air are the cause of _____.
ii. Excessive release of carbon dioxide in the atmosphere is the cause of _____ effect which produces global warming.
iii. The ozone layer prevents the harmful _____ radiation of the sun from reaching the earth.
iv. Decrease of the concentration of ozone in the stratosphere is the cause of formation of _____ holes.
v. Ozone depletion is mainly caused by the active _____ atoms generated from CFC in the presence of UV radiation.

(b) Name the gas evolved in the following reactions: [5]

i. Steam is passed over red hot iron.
ii. Hydrogen is passed through boiling sulphur.
iii. Sodium nitrate is heated.
iv. Zinc carbonate is heated.
v. Red lead is heated.

(c) Give the formula and the valency of the following radicals: [5]

i. Acetate
ii. Stannate
iii. Nitrite
iv. Aluminate
v. Zincate

(d) Deduce the molecular formula of the following salts: [5]

i. Potassium bisulphide
ii. Sodium nitrite
iii. Calcium carbonate
iv. Aluminium carbide
v. Zinc phosphide

(e) What is the valency of the underlined element in the following compounds? [5]

i. $\underline{Ca}Cl_2$ ii. $\underline{C}Cl_4$ iii. $\underline{Cu}SO_4$ iv. $Na\underline{AlO_2}$ v. $Fe(\underline{NO_3})_2$

(f) Balance the following equations: [5]

i. $Fe + H_2O \rightarrow Fe_3O_4 + H_2$
ii. $Ca + N_2 \rightarrow Ca_3N_2$
iii. $Zn + KOH \rightarrow K_2ZnO_2 + H_2$
iv. $Fe_2O_3 + CO \rightarrow Fe + CO_2$
v. $PbO + NH_3 \rightarrow Pb + H_2O + N_2$

(g) Name the following: [5]

i. A gas which turns Nessler's reagent brown.
ii. A gas having burning sulphur smell.
iii. An inert gas having complete duplet.
iv. Catalyst used during the hardening of oil.
v. A metal which reacts reversibly with steam.

(h) Each question has four options out of which only one option is correct. Write the correct option. [5]

i. Choose the air pollutant which is non-acidic.
(a) NO_2
(b) SO_2
(c) SO_3
(d) Ozone

ii. Choose the odd one.
(a) HCl
(b) H_2CO_3
(c) HNO_3
(d) H_2SO_4

iii. On adding water to sodium, the solution formed is
(a) Neutral
(b) Alkaline
(c) Acidic
(d) Amphoteric

iv. According to Boyle's law, as the pressure increases, the volume
(a) Increases
(b) Decreases
(c) Remains the same
(d) First increases and then decreases

v. In the element $^{23}_{11}Na$, 11 represents
(a) Mass number
(b) Atomic number
(c) Number of neutrons
(d) None of the above

SECTION II (40 Marks)

*Attempt any **four** questions from this section.*

Question 2

(a) Hydrogen may be prepared in the laboratory by the action of a metal on an acid. [3]

a. Which of the metals copper, zinc, magnesium or sodium would be the most suitable?
b. Which of the acids dilute sulphuric, concentrated sulphuric, dilute nitric acid and concentrated nitric acid would you choose? Explain why you would not use the acids you reject.
c. How would you modify your apparatus to collect dry hydrogen? Which drying agent would you employ for this purpose?

(b) Name the following: [2]

i. The law which studies the relationship between pressure and volume at constant temperature.
ii. The law which studies the relationship between temperature and volume at constant pressure.

(c) Match Column A with Column B: [5]

Column A	Column B
(a) Element short by 1 electron in octet	(i) Transition elements
(b) Highly reactive metals	(ii) Noble gases
(c) Non-reactive elements	(iii) Alkali metals
(d) Elements of groups 3 to 12	(iv) Alkaline earth metals
(e) Radioactive elements	(v) Halogens
(f) Elements with 2 electrons in the outermost orbit	(vi)Actinides

Question 3 [3]

(a)

i. What is the nature of change on cathode rays?
ii. State the properties of cathode rays.

(b) Find the percentage mass of water in epsom salt $MgSO_4 \cdot 7H_2O$. [2]

(c) Complete and balance the following equations: [5]

i. $N_2 + O_2 \rightarrow$
ii. $NO + O_2 \rightarrow$
iii. $S + O_2 \rightarrow$
iv. $SO_3 + H_2O \rightarrow$
v. $KNO_3 \xrightarrow{\Delta}$

Question 4

(a) Give reasons why: [5]

i. Common salt becomes wet during the rainy season.
ii. The level of concentrated H_2SO_4 in the jar increases when exposed to the atmosphere.
iii. Washing soda loses its weight when exposed to the atmosphere.
iv. Copper does not react with water even when strongly heated.
v. Ferric chloride is stored in airtight bottles.

(b) State which of the following salts increase in weight, decrease in weight or remain the same when exposed to the atmosphere. [5]

i. Sodium hydroxide
ii. Ferric chloride
iii. Green vitriol
iv. Concentrated sulphuric acid
v. Common salt

Question 5

(a) What are the merits of Mendeleev's periodic table? [5]

(b) The following questions are related with the long form of the periodic table. [5]

i. State the modern periodic law.
ii. In which group are halogens placed in the long form of the periodic table?
iii. In the long form of the periodic table, the elements are arranged in the ascending order of _____.
iv. The number of shells is equal to the number of _____.
v. _____ metals are present in Group 1 of the periodic table.

Question 6

(a) Three elements 'A', 'B' and 'C' have atomic numbers 4, 12 and 19, respectively. State the electronic configuration and the number of valence electrons in each element. [3]

(b) Explain the distribution of electrons in Bohr's model of an atom. [5]

(c) State the position of hydrogen in the modern periodic table. [2]

Question 7

(a) At a constant temperature, a gas at a pressure of 750 mm of mercury occupies a volume of 100 cm^3. If the volume is decreased by 40%, then find the new pressure. [3]

(b) 2.5 dm^3 of dry nitrogen gas is collected at a temperature of 27°C and a pressure of 740 mm of mercury. Find the volume of the gas at STP. [2]

(c) Which chemicals are responsible for the depletion of the ozone layer? Explain in detail. [5]